

PATENT
IBM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re Application of | : | Carro, et al. |
| Serial Number | : | To Be Assigned |
| Filing Date | : | March 8, 2001 |
| Examiner | : | To Be Assigned |
| Group Art Unit | : | To Be Assigned |
| For | : | METHOD AND SYSTEM OF MARKING A TEXT DOCUMENT WITH A PATTERN OF EXTRA BLANKS FOR AUTHENTICATION |

TO: The Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

With respect to the Patent Application filed concurrently herewith, please substitute claims
1 - 10 set forth hereinafter for claims 1 - 10 as contained in said application.

Insert the followings claims:

-- What is claimed is :

1. A method of marking an original text document,
said original text document comprising words separated by inter-word intervals,
said inter-word intervals including one or more blank characters having
numbers, said numbers being altered,
said method of altering said numbers of said blank characters, comprising the
steps of:
applying a reversible transform over said original text document in order that all
said inter-word intervals become exclusively comprised of odd numbers of said blank
characters;
splitting and transforming said original text document into a first subset and a
second subset of said words including trailing blanks of said inter-word intervals
of said words;
and, over said first subset:
computing from said original text document and a secret-key, an authentication
pattern that fits the number of said intervals of said first subset;
adding inter-word blank characters in positions corresponding to said
authentication pattern;
generating a canonical form of said first subset;
computing, from said canonical form of said first subset and said secret-key, a
blurring pattern that fits the number of said intervals of said first subset;
modifying the numbers of inter-word blank characters according to said blurring pattern;
and, over said second subset:
generating canonical form of said second subset;
computing, from said canonical form of said second subset and said secret-key, a
blurring pattern that fits the number of said intervals of said second subset;
modifying the numbers of inter-word blank characters according to said blurring pattern;
recombining said first subset and said second subset
thereby, obtaining a marked text for authentication.

2. A method of authenticating a marked text document, said marked text document comprising words separated by inter-word intervals, said inter-word intervals including one or more blank characters having numbers which are checked, said method comprising checking the numbers of said blank characters utilizing the steps of:

splitting said marked text document into a first subset and a second subset of said words including trailing blanks of said inter-word intervals of said words;
and, over said first subset:
generating a canonical form of said first subset;
computing from said canonical form of said first subset and a secret-key a blurring pattern that fits the number of said intervals of said first subset;
erasing modifications brought to the numbers of said inter-word blank characters per said blurring pattern;
extracting an authentication pattern thereby, obtaining in all said inter-word intervals, odd numbers of blank characters;
and, over said second subset:
generating canonical form of said second subset;
computing from said canonical form of said second subset and said secret-key a blurring pattern that fits the number of said intervals of said second subset;
erasing modifications brought to the numbers of said inter-word blank characters per said blurring pattern thereby, obtaining in all said inter-word intervals, odd numbers of blank characters ;
recombining said first subset and said second subset;
applying a reverse transform thus retrieving said original text document;
computing from retrieved, said original text document
and said secret-key an authentication pattern that fits the number of said intervals of retrieved said original text document ;
comparing extracted said authentication pattern

and computed said authentication pattern;
if matching exactly, accepting said marked text document as authentic;
if not:
rejecting said marked text document as fake.

3. The method defined in claim 2 wherein splitting steps includes the preliminary steps of.
generating a canonical form of a text document; computing, from said canonical form of said
text document and said secret-key, a splitting pattern that fits the number of said intervals
of said text document; thereby, allowing to split and to recombine said text document
on the basis of asserted and non-asserted bits of said splitting pattern.

4. The method defined in claim 3 wherein said authentication pattern, said blurring
pattern and said splitting pattern are binary vectors comprising a number of bits matching
the number of said inter-word intervals.

5. The method defined in claim 4 wherein said canonical form is obtained in stripping all
blank characters, in excess of one, off said inter-word intervals.

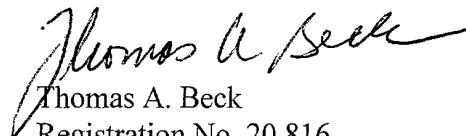
6. The method defined in claim 5 wherein modifying steps include:
in the positions corresponding to the asserted bits of said blurring patterns:
adding one blank character if said inter-word intervals comprise of an odd number of said
blank characters; and
removing one blank character if said inter-word intervals comprise an even number of
said blank characters.

7. The method defined in claim 6 wherein modifying steps and erasing steps are performed identically.

8. The method defined in claim 7 wherein extracting step includes removing one blank character in those of said inter-word intervals that are comprised of an even number of said blank characters;

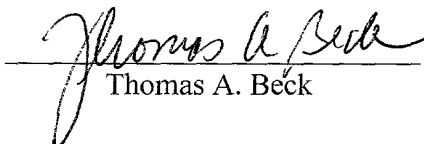
obtaining a binary authentication vector with asserted bits corresponding to positions where said blank characters were removed.

Respectfully Submitted,



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I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231 *Express*


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Dated: March 12, 2001